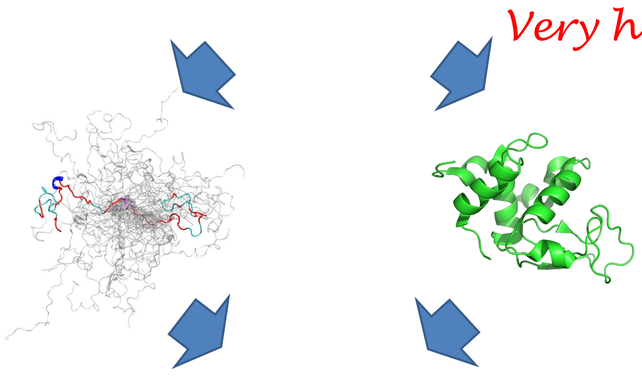
Intrinsically disordered proteins and protein design: From fundamental principles to applications in health and biotech

Research group of Magnus Kjærgaard

De novo design of intrinsically disordered proteins: Nature's super-polymers

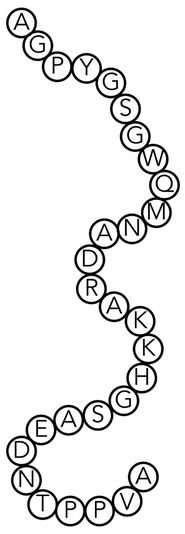
Sequence

Very hard



Function

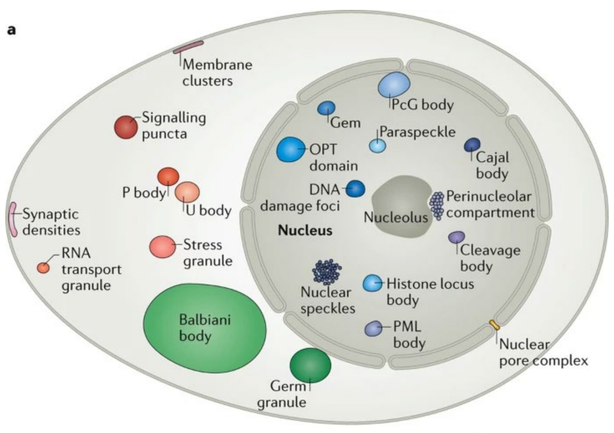
IDPs are **designable super-polymers** with precisely defined sequences of 1000s of residues.



Can we mimic tardigrades' incredible resilience to make chaperones that **protect protein pharmaceuticals**?

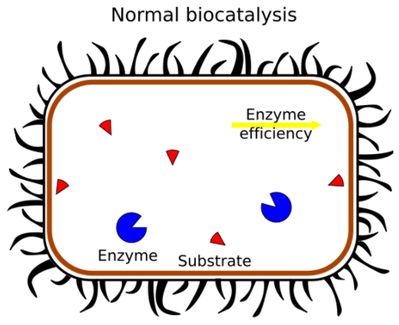
Membrane-less organelles as regulators of biochemistry

Membrane-less organelles represent a **new general organization principle in biology** based on spontaneous assembly of macromolecules.

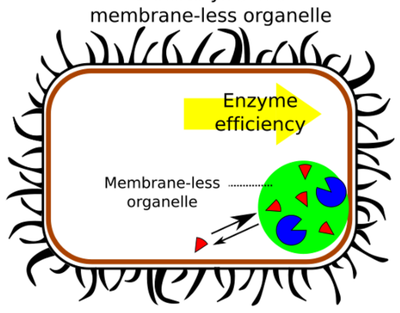


Can we **design new organelles** for use in biotech?

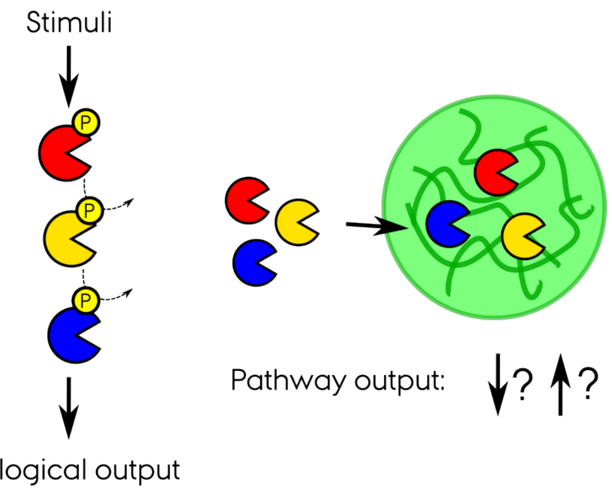
Normal biocatalysis



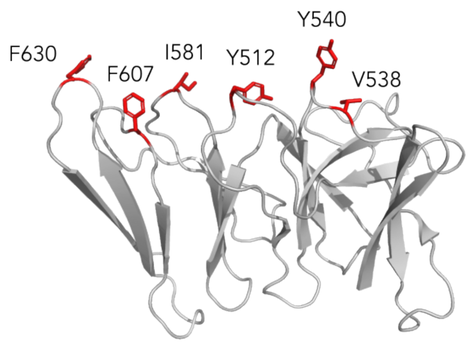
Biocatalysis in a membrane-less organelle



Can we **design new organelles** for use in biotech?

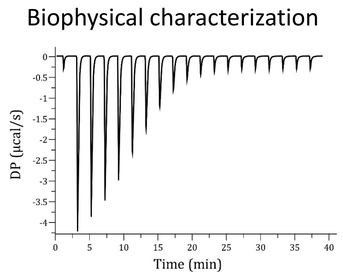


De novo protein design for neuroscience

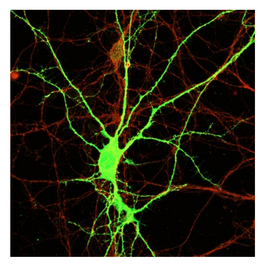


De novo protein design by A.I.

Biophysical characterization



Functional characterization in cultured cells



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